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CONTENTS.

PAGE

An Inquiry into the Nature and Benefits of an Agricultural Survey of the State of South-Carolina; by John Bachman, (concluded).....81

On Manures; addressed to the Agricultural Society of St. John's Colleton; by M.....96

On planting Corn, Peas, Potatoes, and Manuring; by W. W.....99

On the General Management of a Plantation; in reply to Queries addressed to several gentlemen interested in Agricultural Pursuits; by J. D. E.....102

An Experiment in cultivating Corn, by ploughing it one way; by Colleton,..108

On the Proper Application of Manures,.....109

The Agricultural Survey; by J. B.....117

Reply to the same; by Edmund Ruffin, Esq.....118

MONTHLY HORTICULTURAL CALENDAR.....120

Introduction of a new Grape into South-Carolina,.....120

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THE SOUTHERN AGRICULTURIST.

(NEW SERIES.)

Vol. III. FOR MARCH, 1843. No. 3.

AN INQUIRY INTO THE NATURE AND BENEFITS OF AN AGRICULTURAL SURVEY OF THE STATE OF SOUTH-CAROLINA.

BY JOHN BACHMAN.

(Concluded from page 65.)

2. The next important branches that should be taught in an Agricultural School, are *Geology* and *Mineralogy*. These are so closely connected in many particulars, that they can scarcely be separated, still some are alone applied to the arts, whilst others are more directly beneficial to agriculture. A beneficent providence has scattered mineral and organic wealth, through every portion of the earth. Our mountains abound with it, and on our sea-board there is no deficiency, although it appears in another form. The different minerals can be distinguished from each other, by forms, obvious at once to the senses. The mineralogist, can at a glance, detect the characteristics of each species, and is thus enabled to ascertain, what may be profitable to man, and reject what is of no value.

How much labor is annually bestowed, how much money expended, and how much deception practised on the simple and credulous, which might all be prevented by a knowledge of mineralogy. How many a speculation in a gold mine, which has brought ruin on the family of the purchaser, might have been avoided, had he possessed this knowledge. I have seen a poor family thrown into extacies, and dreaming for months over their anticipated wealth, because an ignorant pretender, had discovered on their lands, an ore, which he called gold, and pronounced the mine of immense value, but which a mineralogist detected as nothing more than sulphuret of iron. I well recollect the sensation produced among the farmers of New-York, when, in consequence of the last war, they were unable to import from the British province of Nova Scotia, their Gypsum or Plaster of Paris, which was in universal use. The plaster had risen in price, to thirty dollars per ton, and at last could not be procured on any terms. Man is full of expedients, and without the res-

training influences of religion is not over honest. A man in the north western part of the State, (whether the public finally decided him to be a knave, or an ignoramus, I do not recollect) pretended to have discovered a bed of plaster, which he offered for sale at ten dollars per ton. The farmers from Renssellaer, Albany, and adjoining counties, in a circuit of an hundred miles, went in their sleighs to lay in their store of plaster. The article was as hard as granite, and many a mill-stone was broken in the operation of grinding. The following summer it was discovered, that they had spent their money and labor for nought, as the material was of no more benefit to their land, than so much sand. But the same science that detected the deception, discovered also a remedy for these temporary losses and vexatious impositions. A careful examination was made of the surrounding country, and not thirty miles from the above locality, an inexhaustible bed of Gypsum was in reality discovered, which has proved a greater blessing to that part of the State, than a mine of gold. Marl is now universally acknowledged to be of immense value as manure. The maritime districts of our State, abound with it, and it has been discovered in many localities, widely remote from each other. That, scarcely a planter in the State, knows what it is, is sufficiently evident, from the specimens they are constantly sending to Charleston from all quarters which they either believe, or hope to be marl, but which most generally proves a very different material, and of no value as a manure. The knowledge, industry, and zeal of Ruffin in having directed the planters of lower Virginia, to the use of marl, cannot be too highly appreciated—in his scientific researches and judicious instructions, he is rescuing from sterility a soil, which Washington had defended with his sword.—His admirable Essay on Calcareous Manures, should be in the hands of every planter, on our Southern sea-board.

3. *Vegetable Physiology*, is another subject which holds an important rank among the studies, that should be pursued in an agricultural School. This science investigates and explains the structure and vital character of plants. Vegetation is either favorably or injuriously affected by the seasons, the changes of weather—the soil and temperature. The organization differs so widely in the several species, that some will flourish only in an atmosphere, impregnated with salt particles, whilst others inevitably perish, if planted in the same locality. In my garden, a part of which is occasionally overflowed with salt water, the cabbage and cauliflower sustain no injury, but are rather improved by a moderate watering of this nature, whilst on the contrary, the bean, corn, spinage, and several other species, remain diminutive in size, become sickly in growth, and generally perish. In particular regions of our country, certain plants are only found where the clay soils prevail, but can never be detected beyond the line which separates this region from the adjoining sandy and loam formations. Some

plants only flourish in limestone regions. The winds, the birds, and the hand of man, scatter the seeds far and wide, but they refuse to vegetate in soils, that are not adapted to their growth.—The Baccharis, Salicornia, Salsola, and several other plants, as well as the interesting foreign shrub, the Tamarix gallica, thrive only in the neighborhood of salt-water, and are not found beyond these prescribed limits; yet, let but an atmosphere and a soil be prepared for them, either by nature or art, and they will easily grow and flourish there. Thus, the salt springs of Onondago, are, I think, several hundred miles from the sea, yet I have observed several species of these maritime plants flourishing there, although not a single specimen can be found growing in all the intermediate regions. Plants too, produce varieties, often infinitely more valuable, than the originals from which they sprung, and are so improved by culture, that nearly their whole characters are changed. Still all these changes take place, in accordance with the fixed and invariable laws of nature. The object of the vegetable physiologist is, to investigate these laws, in order that by acting in accordance with them, he may bring the vegetable kingdom under his control, and render it subservient to his use. The experiments of Van Mons on fruit trees—the infinite varieties of Japonica, Dahlia and Rose, that have been produced of late years, by peculiar modes of culture, are sufficient evidences of the triumphs of science in this department.

4. The next subject of importance to be taught in an Agricultural School, although not in the regular order of succession, is that of *simple Mathematics*, including Arithmetic, Geometry, Levelling, Surveying, &c. Without a general knowledge of these, the planter will often be at a loss in pursuing chemistry, and other studies, with profit and pleasure. The agriculturist must be a careful calculator. He must be able to ascertain what kinds of produce will be most valuable for him to cultivate, taking into consideration his pecuniary means, his locality, and the peculiar character of his soil. He must be able to keep his accounts correctly. A knowledge of Surveying will often save him from litigation, and the art of Levelling is all-important, in enabling him to act with judgment, and to save expense in digging ditches, or canals. A striking instance of the importance to the planter, of the simple art of Levelling, came under my notice during the last year. A gentleman engaged several Irish laborers to dig a boat canal of two miles in length, at a cost of about two thousand dollars. The tide water was to convey the boats to both ends of the canal. The workmen ridiculed the idea of having a scientific level taken, inasmuch, as by carrying the tide water with them, they would be certain of finding a true water level. The canal is dug; the water overflows its banks at the mouth, but scarcely extends half the distance up the canal, and the evil must now be remedied, either by a lock, or an immense labor in digging down from the summit, which appears to be six or seven feet above the level of the lower part of the canal.

5. Another department in an Agricultural School is *Mechanical Philosophy.* The planter is a man of all kinds of work, and should understand the general principles of every addition, or improvement that is going on under his eye. A knowledge of mechanics will often save him from being imposed on by the workmen he employs, and will enable him to have his house, out-buildings and fences, constructed for comfort, with a due regard to durability, economy and taste. He is constantly using machinery, and various implements of husbandry; these should be so constructed as to produce the greatest effect with the smallest expense of power. New inventions are constantly pouring in upon him, and he should possess sufficient mechanical knowledge, to be able to decide what he ought to appropriate to his use as a beneficial, and what he should reject as worthless. Such are the complicated duties of the planter, that some knowledge of mechanics seems almost indispensably necessary, to enable him to carry on successfully the various operations that pertain to his profession.

6. The *rearing of Animals in domestic* use, should be regarded as a subject of sufficient importance to hold some rank in an institution of this kind. In Europe, much attention is paid to this subject. In this department, Great Britain is far in advance of the world. Their fine breeds of horses,* horned cattle, sheep and swine, have been produced not accidentally, but by a thorough knowledge of the peculiarties of those varieties, from which new and improved breeds were to be produced. In England, they have separate breeds of horses, adopted to the various services required of them; and the strong unwieldy dray horse, the carriage horse, the hunter and racer, may be distinguished at a glance. Those varieties of horned cattle are selected, which are best adapted to the pastures on which they are to feed; thus, in the rich level counties of England, and the Lothians in Scotland, the heavier breeds of cattle and sheep are preferred; but, in the mountainous regions, breeds inferior in size, but equally profitable, are reared, and the black cattle, and the black faced sheep, from the highlands of Scotland, supply the markets of Edinburgh, where they are regarded as fully equal in flavor with the larger breeds. I need not say how negligent our planters have been in regard to

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* The finest collection of horses I ever beheld was at Regensburg, (Ratisbon.) in Bavaria, in 1838. They were owned by the wealthy and luxurious Prince of Taxus, whose expensive stables were more magnificent than many of the palaces of Europe. They were fitted up with marble troughs, fountains for bathing, with the different names of the animals, theis countries and pedigrees, placed in gilt letters on the wall. Each horse had his groom, and they were daily exercised in a magnificent circus. Among these, were not only horses of approved varieties from Mecklenburg, Saxony, Austria, Turkey, and France; but, several of the famed barbs from Arabia, and a number from England. To my eye, which I confess is unskilled in these matters, the English courser appeared not only the most elegant in form, but was admitted by better judges than myself, to be more active and fleet, than those of Arabia itself.

their live-stock of every kind; cows turned into the woods to feed on Broom-grass, are not likely to contribute much to the dairy, and we need not be surprised if our hospitable planters, who own an hundred head of cattle, sometimes find some difficulty in procuring milk for their coffee. Long legged hogs, which appear to have been selected rather for speed than weight, with long noses to root in the pine lands, require as much corn in the fattening season, as would purchase a much greater quantity of bacon ready cured.

I was highly gratified at Edinburgh, on observing a crowd of intelligent young farmers, listening with intense interest to, and taking notes on the Lectures of Professor Lowe, on the rearing and management of horses, horned cattle, sheep and swine—on the varieties adapted to different localities—their diseases and modes of cure. His Lecture-room was embelished with fine paintings of the various animals that were esteemed for their valuable properties.

Nor should the rearing of Poultry be regarded with indifference by the planter. We frequently hear the remark, "I do not raise poultry, because I do not know the art." This only proves that he has still something to learn, before he has made himself fully acquainted with the duties of his profession.

7. The next study which is very important in an Agricultural School, is *Botany*, in the broad sense of the term, which includes not only the names and systematic arrangement of plants, but their properties and uses. The world is infinitely more indebted to science, for the introduction of those productions, which minister to the comfort, the wealth, and power of man, than men are generally disposed to allow. For the introduction of nearly every grain, vegetable, fruit and flower, that minister to the support, comfort, or pleasure of man, we are indebted first to the Botanist for its introduction, and afterwards to the scientic culturist for its improvement. The seeds of our valuable plants, were collected by the Botanist often at the risk of life in wild distant regions; wheat, barley, rye, rice, the potatoe, cotton, the ground-nut, &c., are all the productions of distant lands, where the world is in most cases lying in barbarism. But we are as much indebted for the improvemont of plants to the scientific cultivator, as we are to the Botanist that first introduced them. Such have been the improvements in the various varieties of wheat, rye, rice, and barley, that Botanists themselves are now at a loss to designate the original plants from which they sprung. The potato, which is now the the food of millions, had its origin from a bitter root which grows wild in the mountains of South America, and is not larger than a bean, as I have satisfied myself by examining specimens from Montevido. It was never used as food in that country, till, by scientific culture in Europe, where varieties were produced from the seed, it had become so improved, that it has now been sent back to its native soil, to prove a blessing to the barbarians, that hitherto were

unacquainted with its value. The carrot originated from a wild and poisonous plant growing on the rocky cliffs of England. The acrid and disagreeable Apium graveolens has been transformed into delicious celery. The wild cabbage, (Brassica oleracea,) a plant not weighing half an ounce, has been improved into cabbages, whose leaves alone weigh many pounds, and into the cauliflower the most delicious of vegetables. Our fine Swedish turnips have been produced by improved culture, from the (Brassica napus,) the common and worthless rape; as has our fine turnip descended from the turnip rape, (Brassica rapa,) which in its wild state is small, fibrous, bitter, and wholly unfit for use. The same may be said of our fruits. The bitter wild crab of Europe, is the origin of our apples, and the wild pear, which I saw in the forests of Hungary, not larger than a musket ball, and as acrid as the unripe persimon, has, by long and scientific culture, produced our delicious pear.

There is another advantage which the planter would derive from a moderate share of Botanical knowledge. He would not be so frequently imposed on, by having seeds of plants palmed on him, as new species of inestimable value, which would, subsequently, prove some common worthless weed. The cunning Italian has chuckled over the oft repeated hoax he played on the Americans, who seized with avidity on, and paid an exorbitant price for the seed of the Italian mulberry, labelled Morus multicaulis. The famous Florida coffee, was sent to the seed stores in Charleston, as a newly discovered species, that would soon shut up the coffee trade of Havana and Mocha. High prices were paid for the seed; acres were planted by the farmer, and magnificent results were anticipated. A single glance of the Botanist, detected in it a troublesome and worthless weed, (Cassia occidentalis,) growing in most of our plantations in Carolina, which the hoe of the servant had long been engaged in destroying, but which the simplicity of his master was now requiring him to replant, as infinitely more valuable than cotton or corn. For the want of this Botanical knowledge, ludicrous, and sometimes mortifying mistakes have occurred, where no blame could be attached to the vender of the seeds or plants, but were simply occasioned by an ignorance of Botany in the purchaser. I have seen many American plants that had been ordered from Paris and London, by our florists, with no higher recommendation than the exorbitant prices marked on the Catalogue; and when these plants were received, their new owners were not a little surprised to find that they had imported Azelias, Rhododendrons, Lobelias, Kalmias, Bignonias, and Magnolias, which they could have obtained by cart loads in their own woods. Some fifteen or twenty years ago, my esteemed neighbor, James Nicholson, obtained from Missouri the seeds of a grass, on which the wild cattle and buffalo, were said to feed and thrive. He disseminated the seed among his friends, who cultivated it under the name of

Lewis and Clarke's grass. Among the rest, I sowed a bed of it in my garden, where I had for many years been making experiments on some European grasses. The plants came to maturity, and I was not a little surprised to find, the far famed Lewis and Clarke's grass, to be an old and well known European species, the meadow soft grass, (Holcus lanatus) which I already possessed. The soil in which it was sowed, was not probably suited to its growth, and I finally regarded it as inferior to the blue grass, (Dactylus glomerata,) to which I have given the preference as a winter grass. I made allusion to these experiments in the October number of the Southern Agriculturist of 1834, page 520, of which I was the temporary Editor, during the absence of the friend who so ably conducted it. Recently, a distinguished Agriculturist in Europe, sent to me for some of the far-famed Musket grass, from Texas, of which I had heard a favorable notice from some of my friends, but had overlooked the printed accounts. The seeds were accordingly obtained from Columbia, I hesitated in sending them immediately, inasmuch as I suspected in them an old and familiar acquaintance, which, on being forwarded to Europe, would be like sending "coals to Newcastle." An imperfect specimen of the mature plant, kindly sent by my friend Joseph O'Hear, rendered it quite certain, that I had once more, under a new name, obtained the Holcus lanatus, the famous Lewis and Clarke's grass, of Mr. James Nicholson, described by Linnæus, Curtis, Schreber, Knapp, and a whole host of European Botanists, —a native of the woods and fields of Europe, experimented on by agriculturists, and supposed less valuable than many other grasses in cultivation; introduced into New England by our pilgrim forefathers, and carried by migratory birds to the far West, and all over the land. Here now are seeds of a grass that have passed through the hands of the most intelligent, patriotic, and purest men of the State, liberally and generously disseminated over the country, and yet sad mistakes have orginated from a want of Botanical knowledge. The grass, I trust, may yet prove as beneficial to the State as the most sanguine could desire. That which is unsuited to one soil and climate, may be admirably adapted to another. But had those who imported and disseminated the seed, possessed a small share of scientific knowledge, they might have been instructed by the experiments made on it, for a century past in Europe, and America, and obtained it far short of Texas, even in many of their own fields and gardens.

The advantages of the study of of sytematic Botany, may be farther seen in removing the evils which result from the use of the common names given to plants, which are not uniform, even in different neighborhoods of the same State. How many species of plants are there, that are called Snake-root, by the people of the country, which are indiscriminately applied to the cure of diseas es, although their characters and medicinal properties differ

very widely, some being cathartics, some emetics, and others tonics. Various species of the three very distinct genera of Gentiana, Aristolochia and Asarum, are called by this unmeaning name. But more especially do we find this confusion, existing in the common names given to Grasses; I will illustrate this by a familiar instance. The farmer of New-York possesses an invaluable grass called the Timothy grass, named, it is supposed, after the man who is said to have first introduced it into cultivation. But he has heard of other fine grasses on which he is also desirous of making an experiment. He sends to England for the Meadow Cats-tail, the finest grass in Europe; and to Maryland or New-England, for the far famed Herd's-grass. When these seeds have been received, after much expense and trouble, he will discover that these are but different names for the Timothy grass, he already possesses, and that he could have acquired the specific name of Phleum pratense, by which it is known among Botanists all over the world, much easier than he has learnt the various vulgar names by which such confusion has been created.

8. Another department in Natural History, which ought not to be altogether overlooked in an Agricultural School, notwithstanding it is regarded as a study wholly unconnected with Agriculture, is *Ornithology*. Nature has wisely provided that one race of animals should serve as a check upon the too rapid increase of others. This uniformity is seen in every department of her works. The bird is a blessing to the husbandman by destroying the reptiles and insects, which would otherwise be an annoyance to him, and by ridding the earth of a superabundance of the seeds of weeds and grasses. The Stork in Holland, the Turkey Vulture in Carolina, and the Rooks of England, are familiar instances, where man has acknowledged the benefits derived from some of their species; and indeed the boxes provided for the Purple Martin, and the calabashes for the house Wren, all go to testify that the farmer is not wholly unmindful of the benefits he derives from some of the feathered race. I would we could say this of many other species, that have been either neglected or misrepresented. So ignorant are our culturists of Ornithology, that they know not what birds should be destroyed as nuisances, or preserved as benefactors. Old Kalm tells us a story that will bear frequent repetition; that in Virginia, in his day, a bounty was given for the destruction of the little Crow, meaning, no doubt, some species of what are usually called Black birds, of which there is a considerable number of different Genera and habits, a few doing some injury to the corn, but the great majority, the Cow bird, (Leterus pecoris,) especially, being decidedly beneficial to the farmer; but they were destroyed, (of how many species there was no Ornithologist to tell,) and the consequence was that such was the increase of destructive insects, that they, after a great expenditure of money, would have bought back the murdered birds at any price. In the days of our

forefathers, a Governor of New-England offered three-pence a head for the Purple grackle ; but it is said the insects multiplied so rapidly, that the herbage was destroyed, and the inhabitants were obliged to import hay from Pennsylvania and England. In fact, a single bird of this species, by destroying the grubs that feed on the young corn, saves more corn than would feed an hundred Grackles for a whole year. Even our Hawks, against which the world has declared an exterminating war, do not deserve to be indiscriminately denounced, inasmuch, as a considerable number of the species are not only harmless, but beneficial to us. Four species that visit Carolina, feed on insects—one on fish, one on serpents, and one on frogs and lizzards. "I have made a good day's work said a planter to me, for after watching and crawling nearly all day, I have shot these two Hawks, which is as good as a dozen fowls saved." I thought he looked a little disconcerted, when I informed him that he had killed a pair of his best friends, the Mississippi Kite, a species which feeds alone on insects, and is so little carniverous, that it would not even pounce on a sparrow. Some of our Owls, feed exclusively on mice, others on small birds; and, of all our Southern species, the great horned, or Virginia owl, is the only one which is injurious to our poultry, and this is exceedingly rare. We have two species of Crow on our sea-board, one of which, and the rarest, is principally injurious to corn; the other, feeding on worms, berries and fish, is comparatively harmless, yet they are seldom known as distinct, by the farmer, who denounces vengeance indiscriminately against friend and foe.*

We have in Carolina, about 250 of the 500 species of American birds, found North of Mexico, the majority of which are migratory; but a large minority either remain with us some time during spring and summer, or are permanent residents; of all this number, we have only about a dozen species, that can, by any possibility, be regarded as decidedly injurious to the planter. All our

* In the State of New-York, the following plan has been successfully adopted for thirty years, in preventing the crows from pulling up the newly planted Indian corn. Boiling water is first poured on the seed corn, in suificient quantities to fill the vessel in which it is placed. When the water has stood on a few hours, to become perfectly cool, it is poured off and half a pint of boiling coal tar to every bushel of corn is poured on the seed, which is carefully stirred, until every grain is covered with a thin coating of tar. It is then rolled in Gypsum, which is used as a valuable manure, but is of no particular use in keeping off the crows. The hot water does not affect the vitality of the grain, on the contrary, it hastens its germinative powers. When this plan was first adopted in the Northern States, on a few of the farms, it did not immediately answer the expectations of the farmer, inasmuch, as the fields were visited by a succession of crows, and the new comers were all obliged to submit to a tarred mouth, before they could be induced to desist, and their thievish propensities were encouraged by other fields of untarred corn. But since the practice has become universal, the crow-minder has been found to be superfluous. A few of our Carolina planters, have within the last few years, adopted this plan, adding saltpetre to the hot water, omitting, I regret to say, the Gypsum, and they speak favorably of it. I have no doubt, were it to become general, it would be equally efficacious.

Thrushes and Orioles, our Fly Catchers and Warblers, are useful aids in destroying worms and insects. The tyrant Fly catcher, or Bee bird, is destroyed by our American youths, (who appear to have the organ of destructiveness largely developed) because he is said to kill bees. It is true he may kill the bee that falls in his way, but he makes amends by destroying thousands of noxious insects; and is, moreover, a great protection to the poultry yard, for he never suffers a Hawk to come within a quarter of a mile of his nest—makes war against the Crow and Vulture, and even pounces on the back of the Eagle, the emblem of our pride and glory. The whole tribe of Warblers feed on caterpillars and worms, each individual consuming several hundreds in a day. During the last spring, I had a large bed of cabbages and cauliflowers, which were so infested by the small green cabbage worm, that their leaves were perforated like a honey-comb, and I was obliged to have the worms picked every morning, amounting often to a tea-cup-full. About this time, I observed a nest of the orchard Oriole, in a garden adjacent to mine; the old birds found their way into my cabbage yard, and so thoroughly kept down the worms for three weeks, that they proved better scavengers than my servants, and saved us further labor during that time. But the nest was discovered by the little lads of the neighborhood, who seized on the young, and caught the old in a trap cage, and now the cabbage worm re-appeared, and remained a pest during the whole summer. The countless millions of Sparrows that visit us in winter, merit our protection and gratitude, on account of their devouring the seeds of weeds and grasses, that would, otherwise, overrun our fields; and I even doubt, whether our Rice-bird, whose delicious flesh should disarm our hatred against it, on account of the depredations it commits on our late crops of rice, does not, in another particular, make amends for its hasty autumnal meal, by its return to the same fields on the following spring, in its harlequin dress, to pick up the scattered grains of rice left on the ground, and thus saves in part at least, the labor of picking out the stems of volunteer or red rice.

9. *Entomology.* This important study must yet be pressed into the service of the culturist, and can only be pursued with advantage by men instructed in the schools of science. Until we know the characters of insects, their modes of propagation, and peculiar habits, we can never find a remedy, against their depredations. A proper knowledge of Entomology will save us much useless labor, and be productive of incalculable advantage. Although this science was not regarded in Europe as of great importance to agriculture until within the last twenty years; yet, such successful results have been produced, that the farmer now regards the Entomologist with respect, and welcomes him as a benefactor. As far as I have been able to ascertain, there is not a single insect in that country, whose depredations were formerly dreaded, that has not either been compelled by the power of science, to pause in its career of mischief, or

been exterminated from the farms. It must, however, be recollected, that we are living in another hemisphere, which, as far as Natural History is concerned, is emphatically a new world. There is not a solitary species of native quadruped, land bird, plant or insect in Carolina, that is identical with any species in the old world. Their science can, therefore, only aid us in the manner in which our experiments must be conducted. It is left to us to study the species, and discover the remedies. The pecuniary losses which are sustained by insects in a single year, in two of our staples alone, wheat and cotton, would be sufficient permanently, to endow an Agricultural School in every State and Territory of the Union. There is no greater mystery in the insects that lie imbeded at the joints of the wheat stalk, or that perforate the bolls of cotton, than there is in many better known species, whose habits have been determined, and whose depredations have been effectually checked. We should also recollect, that situated as we are, so near the tropics, where insects so abundantly abound, we are constantly liable to fresh importations of foreign species, that may become permanent residents, if we are not timely guarded against them. Within the last five or six years, a minute insect has appeared on the stems of our Fig trees, which, if left unmolested, destroys the largest tree in a single season, and at one time threatened the destruction of these, the most valuable fruit trees on our Southern sea-board. Its character, however, has been investigated, and we are induced to hope a remedy, which is now in the course of experiment, has been discovered. On the Orange trees of Carolina, an insect, which, when removed from its envelop, is no larger than a pin's point, made its appearance some twelve or fifteen years ago. How it was brought here, or from whence it came, no one can tell, as it appears not to have been described. The evil might have been checked in the bud, but the insidious foe was too insignificant in size to create apprehension, and in a few years, our beautiful orange groves presented the appearance of a forest through which the fires had passed. A severe frost succeeded, and relieved us of the unseemly sight, by destroying effectually the few trees in which there still existed the lingering remains of life. Unfortunately, the same pest (not the less formidable on account of its minute size,) has very recently been introduced into the Orange groves around St. Augustine. If the fires of heaven had blasted every tree and herb, and consumed every dwelling and out-house in those regions of East Florida, where the orange is an article of commerce, the injury the inhabitants would have sustained would have been an hundred fold less than they are now doomed to experience from this insect. I perceive by the fruits obtained this season from Cuba, that this enemy has also found its way into that beautiful Island, and unless the neglected, and despised science of Entomolgy, comes forth to the rescue, we may, a few years hence, look in vain for an Orange, Citron, Lemon, or Lime, from Florida or

Cuba. If the facts I have stated, are not yet sufficient to convince the agriculturist of the evils which arise from the neglect of this study, I will add a few others that have fallen under my personal observation.

About thirty-five years ago, in my native State of New-York, a large spiny caterpillar appeared on the Lombardy poplar trees, the only shade trees then existing in our Northern villages. Men became alarmed, for it was reported, that a dog had been stung and died; rumour soon magnified it into a child that had been killed, in another part of the State. The press issued many strange conjectures and crude speculations. Consultations were held by the fathers of the land on this new danger, from a recently imported, and dreadfully poisonous scorpion, as it was supposed to be. It was urged in vain, that the so much dreaded insect, was only the larva of a gaudy and well known species of Butterfly, (Papilio antiope) and that it would be an act of vandalism, to destroy the beautiful shade trees, for harboring a harmless caterpillar. But the science of Entomology, which had scarcely been heard of, could not stem the torrent of prejudice and ignorance, and it was resolved, that the trees should be cut down forthwith; the axe was soon at work, and in the course of three weeks, the stately poplars in many of the villages, and along the public highways of New-York, as well as in many towns in New-England, were felled and burnt. I am glad that their posterity have grown wiser, and re-planted them.

A farmer on Charleston Neck, two years ago, solicited my advice in regard to the Tomatoe worm, which in spite of the most careful attention on his part, had so increased during the season, that his large crop of Tomatoes, on which he principally depended for the markets, was in danger of being wholly destroyed. "I pick them carefully (said he,) with my own hands every morning, and bury them—I am sure, that at least, none of the large ones escape, yet the more I destroy, the more they multiply." I carried him to his little grave-yard, where he had buried his worms, showed him a quart of the remains of his enemies, which had already been transformed into a chrysalis state, assured him, that those which had attained nearly their full size, would have buried themselves in the ground, if he had not saved them the trouble, that to use a vulgar phrase, he had carried the "Rabbit to the briar-bush," that this chrysalis would soon become a moth, (Sphinx carolinus) and in its crepuscular flight, would, by depositing its numerous eggs on the leaf of the Tomatoe, lay the foundation of ten thousand more of his formidable opponents There was a faint smile of incredulity on his countenance, and thus we parted.

A few weeks ago, I observed in the district of Lexington, near the borders of Edgefield, an extent of country, fifteen miles in diameter, where nearly all the Long-leaved pines had been killed

by a worm, usually called Sawyer or borer—producing, as they supposed, (no doubt correctly,) disease and mortality among the inhabitants, from the decay of vegetable matter, and the exposure of the unshaded earth to the rays of the sun. The ravages of this destructive insect, have been occasionally observed, for many years past, in particular localities, between Florida and North-Carolina. Many of the inhabitants were at a loss to account for the cause of this destruction of their finest timber. Some supposing it to have been occasioned by the heavy rains, of the last season, which they thought might have caused the roots of the trees to perish. The pileated Woodpeckers, were by hundreds, busy in extracting the marauders from the bark, in the various stages of the larva, chrysalis, and the beautiful perfect, coleopterous Insect, and the lads were shooting them in all directions, as many of them believed, from the tens of thousands of perforations in the bark, that these useful birds were destroying their trees.

How frequently have we seen in our maritime districts, vast labor expended by the lovers of fine fruit, in placing layers of oyster shells or a pavement of bricks, around the roots of our Peach trees, in order to guard the fruit from the depredations of that pest, the Peach curculio. A little knowledge of Entomology would have convinced them, that the Insect, as it drops from, or with the fruit, buries itself in the earth, often at a considerable distance from the roots, where it undergoes its transformations, and in the spring, crawls up the the tree to renew its depredations, and that all their labor and expense, is perfectly useless as a preventative, and positively injurious to the growth of the tree. How few farmers are there, who can be convinced, that the worm (Ægeria exitiosa) which causes the gummy exudation from the stem, is in no wise connected with the destroyer of the fruit, and belongs to an entirely different family of Insects. The cause of the slabbering of horses, that feed on the young growth of clover, in the Middle States during summer, rendering the animals poor, and the pastures almost useless, has occasioned infinite contradictory, and some very absurd conjectures; and even now, it has not been satisfactorily determined, whether the evil was occasioned by a poisonous weed, or an Insect, or whether it was to be traced to the clover itself. The same difficulties exist in regard to what is called the milk sickness in Alabama and Mississippi, where thousands of cattle annually fall victims to this disease, and from which we are told, even man himself, is not exempt.

But it may be asked, can science find a remedy against the depredation of Insects? I answer, this has already been done in a large number of cases, in our own country, even with our limited knowledge of the subject, possessing as we do, scarcely a dozen Entomologists, to seventeen millions of inhabitants; and man will prove himself unequal to his high destination, if he does not triumph over every opposing difficulty. The God of Nature has ap-

pointed him Lord over this lower creation. In obedience to his laws, he has conquered the Lion, the Tiger, and the Bear, subdued the native ferocity of the Elephant, and rendered him obedient to his will, and subservient to his use—he has measured the very heavens, and is now beginning to traverse the earth with the speed of the bird, and surely he will not suffer himself to be discomfited by an Insect.

In conclusion, whilst I sincerely hope the contemplated Survey may, by the judicious selection of the individual, to whom the work is entrusted, and by the forbearance, indulgence, and cheerful aid of our enlightened planters, be productive of much benefit to our agricultural interests, I cannot refrain from expressing the desire and belief, that, in due time, we may hear of efficient Agricultural Societies, Agricultural Publications, and an Agricultural School.

The melancholy facts are undoubted, that whilst all our Northern States have advanced in agricultural improvements, South-Carolina has deteriorated. Notwithstanding our mild climate, capable of producing two crops a year—the number of products to which our soil is adapted—the fine streams for mill-seats and manufactories with which our State abounds, and the facilities to a market afforded by our navigable rivers and rail-roads; the increase in our exports is confined to cotton and rice alone, and of the latter, we do not export a much larger quantity than we did half a century ago. Formerly, we exported grains, we are now importing from other States, the materials that serve as food for ourselves and our cattle. In other years, the boats from Camden and Columbia brought corn and oats to Charleston, now these boats are employed in conveying these important and necessary articles of food, as well as hay from our city (where they have been received from the States North of us) to Columbia and Camden. I have some where read a statement made by Mr. Seabrook, the accuracy of which cannot be questioned, that during the last twelve years, South-Carolina had, on an average, imported 350,000 bushels of corn annually. How greatly would this list of our imports be swelled, were we to add to the above the oats, hay, flour, butter, beef, pork, lard, and other articles of food, which might be produced in our own State. Under such wasteful drains on the pecuniary resources of the State—with so many enemies preying on the vitals of her prosperity—under a system of husbandry that is yearly rendering her soil more sterile—confining herself to the culture of cotton, which has greatly fallen in price, and of which more is grown than the world can consume—with rivals in Egypt, India, and Brazil, whilst the South-Western States and Texas, can produce the article at a cheaper rate—how long will it be before South-Carolina will become wholly impoverished?

I have alluded to these humiliating facts, not from any desire of indulging a spirit of disaffection or censoriousness, but with deep

and unmingled regret, that the State of my early choice; whose institutions I love; with whose prosperity my best interests are associated, and for which my most fervent aspirations ascend, should, by a neglect of her agricultural interests, have permitted her neighboring States, possessing fewer natural resources, to outstrip her in the race of improvement, and in that agricultural knowledge, on which our prosperity and power so manifestly depend.

There is a consolation, however, in the belief, that our people are learning a salutary lesson from adversity. The resuscitation of a soil, rendered sterile by improper modes of cultivation, it has now been ascertained, can be easily effected by patience, judgment and a small share of industry. Great-Britain had once an unproductive soil, which by scientific culture, has become the Garden of the World. I well recollect, when the farms of the State of New-York, were cultivated in the mode which has so long and so ruinously been adopted in Carolina. Successive crops of wheat were sown on the same field. In four or five years, the lands were exhausted, and scarcely produced six bushels to the acre—they were then thrown out as old fields; the trees in the neighboring woods were deadened—the under-brush burnt—the new lands cultivated in the same slovenly way, till they, in their turn, became unproductive, and the farmers went to seek for richer lands in the western counties. Now, these old and once abandoned fields, have by a judicious mode of culture, by a rotation of crops, by the use of clover, plaster, lime, and other manures, been rendered more productive than when the lands were originally cleared, and yield on an average, from twenty-five to thirty bushels of wheat, or eighty bushels of corn to the acre. In Carolina too, it has been ascertained, that although we cannot raise such large crops of corn as are produced in the Northern States, we can at least, treble the product of former years. The results of the several experiments recorded in the Southern Agriculturist, are sufficsent evidences of this fact. Mr. O'Hear, during the last season, raised forty-six bushels, Mr. Coward, fifty-two and three quarters, a writer under the signature of Z., fifty-seven and a half bushels, and Mr. B. R. Smith, sixty-seven bushels and eighteen quarts, to the acre.

Within the last few years, I have observed a spirit of inquiry and increased knowledge among our young planters—I can enumerate at least twenty, in the limited list of my acquaintance, who by judicious and scientific modes of culture, have doubled the products of their fields. If the schoolmaster is at work, let us hail him as a benefactor, and send him scholars. If there is a spirit of inquiry, let us give it a right direction. If South-Carolina ever recovers her proud pre-eminence among her sister States, it will be through the means of Agricultural knowledge. When this is effected, she may hope to win back her sons, who have not already permanently essablished their familes, or found graves in the far West. Our impoverished soils will be renovated—our people will be content-

ed with their natives homes, and the future destiny of our State will fulfil the glowing anticipations of those who found it a wilderness, rescued it from the savage, defended it against a foreign foe, and left it as a rich legacy to their descendants.

ON MANURES.

To the Editor of the Southern Agriculturist:

DEAR SIR:—The enclosed communication, addressed to the Corresponding Secretary of the Agricultural Society of St. John's, Colleton, by one of our most successful planters; and read before the Society at its meeting in January, was, by a resolution of the Society, directed to be published in your valuable journal.

I am very respectfully,

Your obedient servant,

J. R. WESCOAT, *Corresponding Sec'ry.*

Agricultural Society, St. John's, Colleton.

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January 5th, 1843.

DEAR SIR:—Your note of the 28th ult., containing a resolution of the Agricultural Society, directing you to report to them what kinds of manure succeeded best for Cotton the past season, I have received, and in reply shall proceed briefly to state the kinds I have used, and the manner of applying them, dwelling more particularly upon such as I have found to have succeeded best with me. My lands, with a trifling exception, are of a high and silicious character, poor, but well adapted to the Cotton plant. The season has been very wet, affecting alike the elevated and depressed portions of my plantation. Than such an one, we could not have had a better to test the relative efficacies of different manures.

The manures employed by me the past year are, marsh, mud, cow and sheep excrements, applied in a moveable pen, horse or stable manure, cotton seed, vegetable mould, lime and gypsum. You perceive I have given you a variety.

Marsh applied in a green state, I have almost invariably found to be prejudicial—inducing even in small quantities, a growth in the plant approaching near to what is usually denominated "Blue Cotton." In the dried state I have used it to considerable advan-

tage, it has never given me early fruit that I remember, but matures a *good top*. The opinion has long been prevalent that *mud* is not beneficial in a wet year, and upon low grounds—I think the results of the past season must have, in a great measure, done away with this impression. It is my opinion, that the superabundance of the moisture acting upon the vegetable ingredients of the soil, produces the several combinations which the different elements therein are made to undergo. Acidity, which is taken up by the calcareous properties of the mud, and, consequently, rendered less injurious to the sensitive fibres of the plant. That mud containing portions of lime or marl, absorbs acidity, there can be no doubt. I have seen it effervesce freely with sulphuric acid, which denotes the presence of this property, and after it has been embedded in the soil for six months, it effervesced as freely with an opposite principle, Sal æratus.

The moveable cowpen I regard as the best and safest method of enriching our lands, and securing a profitable return. I use mud in conjunction with this manure. It tends to preserve an uniform temperature in this laboratory, (the soil) in which food is prepared for plants. Some persons have thought that this animal excrement looses some of its most valuable properties, by being permitted to remain exposed for so long a time as we usually allow before we embed it. Last year I listed in a few acres immediately as the pen was removed, but was not able to discover the slightest difference, either in appearance or production, from that which was not treated in this way. It has been ascertained by chemical analysis, that the fresh excrements of the cow, contain from 80 to 90 per cent. of water, leaving from 10 to 20 per cent. of the alkalies, lime, potash and common salt. The vegetable ingredients which this manure contains, are too inconsiderable when applied in this way to render it valuable on that account, and the nitrogen which is supposed to be one of its most important qualities, is found to be only a half per cent. It would thus appear that the inorganic constituents of the manure constitute its chief value, and consequently suffer no deterioration from exposure. The pen covers a quarter of an acre of ground, on which I have carted previously seven cart-loads of trash from the woods, which is scattered over the pen, and on which about 80 head of cows are enclosed for one night,

This litter becomes broken up and trodden into the soil by the cattle, and this gives to it its vegetable proportions, which its thinness would indicate that it required. Horse manure is richer in proportion to the food on which that animal feeds, and, of course, goes much further. Cotton seed, I have generally applied upon my less elevated and stiffer soils; but I have never done so with any considerable advantage. Well rotted mould from the woods, as a top dressing upon lands already mudded, I have used with manifest benefit. If the inorganic constituents of the soil do not undergo any material dimunition by cultivation, why may we not restore exhausted soils to the fertility of new ones, by giving to them what the new possesses. But a late distinguished writer has contended that, the inorganic portions are carried away by constant croppings, and that those portions constitute the superior fertility of one soil over another. *Lime*, as a manure for cotton, unless used very sparingly, produces a tendency to flaggyness. Gypsum may catch the nitrogen floating in the atmosphere, and keep it subject to the drafts of the cotton roots, but I should judge from the experiment of the past season, that these drafts were not very freely *honored*.

I have been in the practice of levelling my grounds after the crop has been taken from thence, and have good reasons for believing it to be highly beneficial. It renders more compact the soil—it exposes a lesser surface to the action of the summer sun.

The manure, and particularly the mud that has been embedded the season previous, becomes pulverized by exposure—the exudations from the roots of the cotton plant are brought to the surface, and are either consumed by the grasses of the coming summer, or enter into new combinations, by the influences of the gasses in the atmosphere. When the field is permitted to remain in ridges, every shower of rain washes into the alley a portion of the old bed, and consequently exposes a new surface.

I must here stop. I think I have afforded the information asked, and for writing you so long a reply, must plead the interesting subject embraced in it. Yours, &c. M.

For the Southern Agriculturist.

ON PLANTING CORN, PEAS, POTATOES, AND MANURING.

Prince William's Parish, Sept. 27th, 1842.

Dear Sir:—Agreeably to promise, I herewith subjoin a further answer to your questions.

Corn.—Plant about twenty acres to the shovel plough—potatoes and other incidental ploughing included.

When lands have rested two years, or been sown in small grain and pastured the same length of time, I prefer them broken up, and planted the last of February, or first of March, five feet each way, one stock in the hill. Drop from three to four grains in each check, and cover with the plough; as soon as it is up, run one furrow each side of the corn, and in eight or ten days, cross with two other furrows, the plough hands re-planting with one or two grains, as they plough. In about the same length of time, cross again, ploughing the alley entirely out. Thin after the ploughs, placing the fresh earth round the corn with their hands, as they thin, which prepares it for close ploughing, say two acres per day to the plough. After which, from three to four full ploughings will make corn.

Lands that have rested but one year, or planted the previous year, I commonly plant without breaking, working it all much in the same manner—early ploughings deep and close, latter ploughings light, and the two last frequently the same way.

The work must be well done, that no grass nor weeds be left from ploughing to ploughing.

Planters frequently plant more land to the plough; but from observation and experience, I have arrived at the conclusion, that very many planters, from unskilful culture, and suffering weeds and grass to grow in their fields, do not know what their lands would produce, differently managed.

Peas.—When ploughing out corn, drop and cover them in the alley, with the last furrow. This for the most part, is done the ploughing next to the last.

Standing peas plant the first of July; throw up the furrows with the plough, plant with the foot, about three feet distant on the bed; a ploughing and hoeing, or two ploughings will make them. I have what I call an early cow-pea, which comes twice in the year, and must supersede (where they go,) all other kinds for cattle. It yields well, and eight bushels in the husk, when thrashed,

make one of clean peas. When planted in corn, it is best to sow them like small grain, the last ploughing. You can plant them in April, and pick in July for work-horses; or, you may sow on fallow lands, in the months of April, May, June and July, and pick, or pasture in turn, as you wish. This pea is admirably adapted to the upper districts. Generally, I pick and house peas one week, the balance I feed to horses, cattle, and hogs, in the field.

POTATOES.—Plant one quarter of an acre to the hoe, (never less) —prepare the land by breaking with the plough, after it is setles, or trod by cattle, cross with the plough, throwing up the beds four feet and a half wide. The laborer drops the seed, or sticks them in the earth, (about three bushels to the quarter of an acre,) and hauls lightly up, completing a moderate bed. When they begin to come up, (in fair weather,) hoe down and up the same day, one quarter of an acre to the hand, leaving them clean of grass; after which plough the alley once or twice. Three or four workings in this way, will make good potatoes, and the vines will compel you to quit.

The land intended for early slips, plough each time you plough corn, and you will be prepared to plant with the earliest vines and seasons, with great facility, say the last of May and first of June. Make the beds with the plough, cover the vines thick with earth, but not too close. They will take much better than in rough land. Work as you would the root potatoes; be careful, however, not to draw the earth on the uncovered vine.

The present year, I planted stubble land in August, for seed, running a furrow, and sowing cotton seed in the furrow—then listing on them with the hoe; after which, I ploughed and bedded with the hoe, and gave them one hoeing as above. House them in banks, cover thick with straw and earth, which is all they require to keep, except a shelter over them.

I am fully aware, in the progress and practical application of the rules, questions may arise, or under different and adverse circumstances, they could not be carried out. In such cases, success depends on the judgment, skill and energy of the planter.

LAND AND MANURE.—I prefer to rest lands two years and plant them two; they will produce nearly the same each year, and they are in better planting order the second year. Usually I rest over one third, but am not in favor of a rotation of crops, for I think it a constant drain on the capital.

Good cotton land should never be planted in anything else. I would not, however object to peas, on the proviso, you do not gather the vines; neither should the old stocks be cleaned off, when you can possibly plough between them; for doubtless it is beneficial to return as much as possible, of whatever you grow on the soil.

When new lands are planted four years, and rested as above they will continue good. Compared with many planters, I have manured on a small scale. I have, however, tried a variety, but the result was not altogether satisfactory; or, in other words, did not fully compensate for labor, and as I had plenty of wood-lands, preferred the new soil.

For the most part, I manure corn with cotton-seed, or stable manure. The stable manure is best, when taken fresh out of the stable. Spread it on the hill before ploughing, that it may be covered from the sun and air.

Treading land with cattle, is perhaps the best manure for potatoes. I have, however, used stable manure and cotton-seed, much in the same way that I applied the seed to slips.

The present year, I manured ten or twelve acres of cotton with a variety of manures—compost, made with fatening hogs—compost, made with cattle, stable manure, trash and earth, &c. The hog manure matured the plant first, but it continued growing longer; when I applied the cattle and stable manures, the light manure was proportionably beneficial, so that the production of the same land has been increased one or two bags. It was made at no expense and but little labor, and a boy with a mule and block-wagon, hauled it in about two weeks. The better manure remained in heaps, until I commenced ploughing to plant; it was then scattered in the alley before the ploughs.

I have also applied manure to cotton, in a small way, in June and July, by strewing it in the alley; which benefited the plant nearly us much as in the list before ploughing; which leads to the opinion, that some manures may be listed in too soon; that, in the early decomposition, the gass, or some other healthful quality, both to the leaf and root, escapes before the plant is best adapted to receive it.

Herewith, I have endeavored fully and plainly to dispose of all your several and varied questions.

Your obd't servant, W. W

For the Southern Agriculturist.

ON THE GENERAL MANAGEMENT OF A PLANTATION.

In reply to Queries addressed to several gentlemen interested in Agricultural Pursuits.

DEAR SIR: I acknowledge the receipt of your communication, and am pleased to learn by it, that you are taking such a deep interest in the science of Agriculture. I cannot doubt but your example will be productive of much good, and give an additional impulse and influence to it.

Agreeably to your request, I proceed to make some remarks respecting my method of farming; and if in so doing, I can give an idea, or in any way advance the interest of those engaged in it, it will afford me pleasure. I will confine my remarks to a farm of twenty-five hands, which is the number I prefer working on a plantation, on which I would have only six good mules, (not of the largest size,) four for wagoning, and two for ginning; which mules will plough 162 acres, (twenty-seven acres to the plough.) One hundred and twenty-five acres of corn, ten bushels to the acre, will make 1250 bushels; and 15 acres in potatoes, 10 acres for negroes, and 5 separate acres for hogs; this gives one acre and a half per day, to each plough in the corn, and about two acres in the potatoes, and makes the round entire in twenty-one days. Although this may appear light work, yet if the ground be well ploughed, (which is seldom done,) with a plough about nine inches wide, it will be sufficient work; and although potatoes will require but two ploughings, slips, turnips, and other things, will take their place, and require equal labor. Two of the plough hands, rating as half-hands, leaves twenty hands with hoes, for cotton; six acres to each of these, gives 120 acres, which will yield at *least* 700 pounds seed cotton per acre, 4,200 pounds per hand; this is a very moderate calculation. I have often made in this way, 1000 pounds per acre, 6000 pounds seed-cotton per hand.

I must most earnestly request, in all my remarks, to be understood, as cultivating lands in such a way as to enable the soil to give its greatest product. I cannot doubt, from the general method I see practised, by a great many farmers, that for the want of better tending, their lands fail to produce what it would do, by at least one-fourth, independently of the injury the land sustains.

In preparing my cotton lands, I leave no trees standing; and in felling them, I have reference to the direction I intend my cotton rows, so as to have the rows cross them at right angles. Oaks and hickories, I never turn or destroy, but prefer them to lie, decompose, and add strength to the soil. After a year or two, I move them out of their beds, for the benefit of the additional strength they give to the soil where they lie. New land, I tend about three years, before I rest it, after which time, I tend it only every other year. In setting my rows, I have reference to the strength of the soil; such land as will give about 700 or 800 pounds seed cotton per acre, I make three feet nine inches apart; if 1000 pounds per acre, four feet apart. In preparing my lands, I commence about the 1st of March, and list through by the 15th; after which, I immediately commence bedding, which, I finish by the 1st of April, on which day I commence planting cotton. This is my general rule; but if my lands be low and cold, I prefer to defer each process, at least two weeks; and, in a very warm, high, old dry soil, I would soon plant my cotton the 1st of May. The great object is, to regulate your planting so as to have the full benefit of all the growing season, in its first growth, so that the top pods mature about the 10th of October; and if old dry land be planted too early, it ends its first growth by about the 1st of August, and falls short in its product of what it would do, if its growth ended with the growing season. I always plant my cotton in drills, when the land will admit of drilling, and sow about one and a half bushels of seed to the acre. I commence my first working as soon as I perceive the third leaf. I never hoe my cotton down, but draw up lightly every working. I commence thinning my first working, to about a four inch stand, and reduce them to a stand when I see the first forms on my cotton, either to eighteen inches, or two feet on the bed, agreeably to the strength of the soil; if 700 pounds per acre, to eighteen inches; if 1000 pounds per acre, to two feet. One stalk in a place is preferable; this I have proved. When I hoe my cotton, I do not leave *any grass living* in my field; the last duty each hand performs in his task, each time round, is to inspect each row, and see that there is nothing alive that ought to die. This method being pursued, each time round, the work becomes light, which is of first consideration for the preservation of the health of the hands, so that when the

season becomes very hot, and the days long, the work will be comparatively light, and they will be rested and refreshed for the next day's work. If cotton be hoed once this way in twenty-one days, it will be quite sufficient. I continue working my cotton until it commences to open. My regular and constant task is half an acre per hand per day, always giving the heaviest tasks to the strongest hand, and each hand works the same task the season through.

CORN.—If my lands be low, stiff, and cold, I prefer breaking it up about the month of February, or 1st of March, and plant such lands about the 1st of April. If the land be sufficiently fertile to produce twenty bushels of corn to the acre, I place the rows four and a half feet distance each way, one stalk in a hill, and in order to secure a good stand, I plant two grains, and thin out to one, as soon as the corn will admit of it, and replant where it is missing, one grain to each missing hill, always thinning just ahead of my ploughs, the first three rounds, and run the first furrow with a bull-tongue plough, each side of the hill, which is preferable to any other plough to perform this work. In about ten days after which, I carefully hoe or mold the corn, the replanting having come up. I always plough my corn each way, until the two last ploughings, which I give the same way, making my calculations so as to have my peas in the same row with my two last ploughings, which I plant the second plonghing, and have them planted on the south side of my corn. Four ploughings, a moulding, and laying by with the hoe. I find quite sufficient culture for corn. My first ploughing, I give tolerably deep, but lighter each succeeding ploughing. When planting high, dry land in corn, which I suppose will produce ten or twelve bushels per acre, my general custom is to throw it into three furrows, with narrow shovel-ploughs, neatly and well broken up, and as close together as posssible, and place them five feet apart each way, running the crossing or planting furrows deep, and I plant such lands in March. My custom is, to manure my weakest corn land with killed cotton-seed. In that case, I drop my corn and cover it about one and a half, not exceeding two inches deep, and press the covering earth with the back of the hoe, which prepares a flat surface for the cotton-seed to fall on. I put about a pint of seed to each hill, dropped from the hand, (which causes them to scatter a little, which I prefer.) I plant my corn and and drop

cotton-seed with the three furrows, to preserve straight rows. As soon as the corn be planted, I commence cotton-seeding the hills, and commence breaking up between the three furrows, which covers the cotton-seed entire, they being not above the unbroken surface, and finish breaking up each field before the corn comes up.

Potatoes.—I prefer to plant in second or third years' lands, or in land that has been trod by stock; for, unless they be planted in good land, the product will be short, and the labor most unprofitably applied; and, as I consider them a very essential and cheap article of food, I always select land for them, knowing that there is probably nothing that a farmer plants that will so well pay him for his labor. My method of preparing to plant them is, to throw three furrows together, with large two-horse yankee ploughs, which I keep for the purpose: these rows I make four feet apart, having the furrows neatly thrown together, with a sharp top. I open them by drilling with the corner of a new hoe, to give the drills the form of a V, and place the slip, or cutting, which is about two inches long, in the drill, about eight inches apart. If the slips be very large, they may be split in two lengthwise, and placed in with the cut part down. They will do fully as well as a round one of any size. I always, in planting, press the slip in the earth at the bottom of the drill, and cover them about three inches deep, passing the under part of the hoe over the covering, from one end of the bed to the other, to make a flat surface. When the potatoes are just making their appearance, and that not generally, I then break up lightly the unbroken space between the beds, and cover over the beds, potatoes, and fine grass, if there be any, perfectly, by drawing the loose ploughed earth from the alley with hoes; this working increases the size of the beds, and will generally be sufficient, until the potatoes rise, and the vines run from six inches to a foot; then give another ploughing, and sink the alley by deep ploughing, and give a good heavy drawing up with hoes, and pick the grass clean from the potatoes. If this working be well and neatly done, and the beds left perfectly clean of grass, it may be considered the last working. I have some years, but very seldom, sent hands through and pulled out the scattering grass, which seldom appears, as the vines overrun it.

Slip beds, I prepare the same as my potato beds, with my yankee ploughs, and place four potato vines lengthwise in the drill, and cover them *deep* with earth, about twelve inches, then leave a space of about three inches. I prefer planting slips about the 1st of July, always giving them one drawing up with hoes, and destroy all the grass by burying it, or otherwise—but I find burying it the most effectual way, in all cases, to destroy it. Any common land will bring slips large enough to plant, if they be planted by the 1st of July, with one good working, in an ordinary season.

PEAS.—I invariably plant with corn, the second ploughing, and in the first furrow by the corn, carefully dropped exactly opposite the corn, and cover them with the second furrow. This arrangement prepares them to receive the two next ploughings with the corn, which is given the same way. I always pick my peas; and consider them the best of food for horses and milch cows.

I cannot think that any farmer can farm successfully, except he has cleared land to make a full change in his planting land each succeeding year, or double the quantity he tends each year—except what he may clear, or keep up by manure. My rule for clearing land is, one acre to each hand, and keep the plantation in good repair, is as much as can be done. I seldom change my cotton-land to corn; it deranges the rows, and in forming new cotton-rows from corn land, makes them in bad condition for receiving manure or cultivation; nor do I believe there is any good resulting from it in the end. When land be not too much exhausted, I find that resting every other year, with the fences kept up, and stock excluded, will not diminish in its product, if it be level. If the grass and weeds were turned under in August, the year it rested, it would still add to the strength of the land. I always sow about five acres of rye, about the first of November, for each mule, and to pasture hogs on. When the rye begins to turn yellow, it is fit to pasture on; but no horse should be permitted on it until about dark, and taken out by all means, by sun-rise. A strict adherence to this rule, will prevent any injury from the rye-beards, which otherwise would be sure to take place by effecting their mouths. If a mule or horse be thus pastured, one feed of corn and fodder, at mid-day, will keep them in a mending condition, until the pasture be eat out; after which, the fallen rye will be of great benefit to hogs. I also

sow four acres of wheat, three of rice, two of turnips. You perceive, by this calculation, it will require 250 acres of land for corn, 240 for cotton, 60 for rye, 16 for slips, 30 for potatoes, 4 for turnips 8 for wheat, 6 for rice—which makes 614 acres of cleared land—which will require to be kept up and improved. To do this will require all the manure we have the means of making, and it is but seldom that even that number of acres can be found on a farm fit for cultivation. Then, is it possible to adopt the ploughing system and cultivate a greater proportion of the 614 acres each year, without wearing down your land, and finally make it unfit to cultivate, to say nothing of the heavy expense attending this system of culture.

This extended ploughing system of farming has worn out numberless plantations, and caused them to be abandoned as worthless, and their first holders seek better land elsewhere, to the great deprivation of their many comforts in life; as well as our State having lost many of her valuable industrious citizens, which, by a different process, would have increased the value of their farms, and at the end of ten years, would have yielded a much greater profit.

Manures.—Every experienced farmer knows the propriety of enriching his soil. This end is sought in various ways, by different persons. My method is to pen stock of every kind on level land; I find oak and hickory leaves of much benefit to cotton-land, although they be not trod. These I scrape together with hoes, in wet weather, in the fall or winter, with a small portion of the soil with them, into as large banks as can conveniently be made. The method of applying them is in wet weather, by running a straight furrow, with a shovel-plough, between the old beds, and scatter them in the furrow, and cover them with hoes with the earth that was thrown from the furrow. Many persons use pine-straw, by having it trod, but I am of decided opinion that all benefit arising from it is, only the addition made by treading it.

In conclusion, I remark, that I adopt every method I can, in order to make the land I cultivate yield all that the soil can. To illustrate farther, suppose my cotton-rows run north and south, I carry them not to within three or four feet of the fence, as most farmers do, *but up to the fence;* and on the east and west side, I make short rows, from the outside row, *up to the fence.* By this

means, I make the land in the corners of the fence bring good cotton, and also prevent the well known unenviable character of the *outside row*. Many farmers think I am over particular in this respect, as well as in having *all* the grass destroyed at each working but I am not—in order to obtain the result I have so often named in this communication, viz: to make my land yield all that it can.

I am, sir, very respectfully,

Your obd't serv't. J. D. E.

For the Southern Agriculturist.

AN EXPERIMENT IN CULTIVATING CORN BY PLOUGHING IT ONE WAY.

Collins' Cross Roads, Feb. 12, 1843.

MR. EDITOR:—This will inform you that I have just received the February number of the Southern Agriculturist, and I am very much pleased with the contents, particularly the piece from Mr. "W. W." of Prince William's, *on the culture of cotton*. I should be very glad to see his name more frequently in your work, as I know him to be a very excellent planter; and I hope that, since he has began to write for your work, that he will continue to do so.

Annexed is an account of an experiment made in *cultivating corn*, by ploughing it but one way:—I planted a small patch of corn the last year, and I ploughed it but one way three times. I ploughed it deep enough every ploughing to put a little dirt to the corn each time; and it made as good corn as any of my corn that I ploughed both ways, and it looked very near as well as if it had been worked with the hoe. I ploughed it with the yankee-plough and the shovel-plough; I run the yankee-plough next to the corn, and I broke the middle of the alleys with the shovel-plough. The ground that the corn was planted in had been in potatoes in 1841, which left it level. I think I could have done better work in it, if I had began to plough shallow the first ploughing, and increased the depth of my ploughing every time I ploughed, as it would have allowed me to have put more dirt to the corn every ploughing it received.

I have sent you the experiment, because some planters think that corn cannot be made as well by ploughing it one way as both. If you think it worth a place in your work, you are at liberty to publish it

I remain yours, respectfully,

COLLETON.

P. S.—I shall try another piece of corn this year in the same way, and let you know how it succeeds.

I would be glad to hear from some planter on the subject of planting pumpkins.

For the Southern Agriculturist.

ON THE PROPER APPLICATION OF MANURES.

Beaufort, (S. C.) Jan. 25, 1843.

Mr. Editor:—Believing that all the readers of your journal are convinced of the necessity of manuring, and of the great benefits to be derived from it, I have taken the trouble to throw together for their reflection, a few extracts furnishing fair accounts of the two opposite practices and their theories. The great importance of the subject will, I hope, prove a sufficient excuse for the length of of this article, should it be found long. The following extract on fermented manures ploughed in, containing the essence of the system, will be all that is necessary on the side of the old and established practice.

"In the application of farm-yard dung to land under tillage, particular attention is paid to the cleanliness of the soil; and to use it at the same time when, from the pulverization of the ground, it may be most intimately mixed with it. Farm-yard dung, it is well known, is greatly reduced in value by being exposed to the atmosphere in small heaps, previous to being spread, and still more after being spread. Its rich juices are exhaled by the sun, or washed away by the rains, and the residuum is completely worthless. This is in an especial manner the case with long fresh dung, the far greater part of which consists of wet straw in an entire state. All careful farmers, accordingly, spread and cover in their dung with the plough, as soon as possible after it is brought on the land. The use of fresh dung, is decidedly opposite to the practice of the best farmers of turnip (light sandy) soils; its inutility, or rather injurious effects, from its opening the soil too much, is a matter of experience with every one who cultivates drilled turnips on a large

scale. The experience of the effect of recent dung, is accordingly very general, and the result, in almost every case, is that the growth of the young plants is slow; that they remain long in a feeble and doubtful state; and that they seldom, in ordinary season, become a full crop, even though twice the quantity that is given of short muck has been allowed. On the other hand, when the manure is considerably decomposed, the effects are immediate, the plants rise vigorously, and in a few weeks, the leaves become so large, that the plants probably draw the greatest part of their nourishment from the atmosphere. *Though it were true*, therefore, that *more nutritive matter were given out by a certain quantity of dung, applied in a recent state, and allowed* to decompose gradually in the soil, than if applied after undergoing fermentation and putrefaction, *the objection arising from the slowness of its operation*, would, in many instances, be an insuperable one with farmers. *But there seems reason to doubt whether, fresh strawy manure would ferment much in the soil*, after being spread out in so small a quantity as can usually be done; *and also, whether, in the warm, dry weather of summer, the shallow covering of earth given by the plough would not permit the gaseous matter to escape, to a much greater* amount than if the fermentation had been completed in a well built covered dunghill.

Another great objection to the use of fresh farm-yard dung, is, that the seeds and roots of those plants with which it commonly abounds, spring up luxuriantly on the land; and this evil, nothing but a considerable degree of fermentation can obviate. The degree of decomposition to which farm-yard dung should arrive, before it can be deemed a profitable manure, must depend on the texture of the soil, the nature of the plants, and the time of its application. In general, clayey soils are more tenacious of moisture, and more benefited by being rendered incohesive and porous, and may receive manure less decomposed than well pulverized turnip soils require. Some plants, too, seem to thrive better with fresh dung than others."—*Ency. Agriculture.*

On the side of applying fresh manure on the surface, we will take the following extract from the "*Science of Agriculture*," by Joseph Haywood:

"Sir Humphry says, 'In the writings of scientific agriculturists, a great mass of facts may be found in favor of the application of farm-yard dung in a recent state. Mr. Young, in an Essay on Manures, which I have already quoted, adduces a number of excellent authorities in support of the plan. Many who doubted have been lately convinced; and, perhaps, there is no subject of investigation, in which there is such a union of theoretical and practical evidence. I have myself, within the last ten years, witnessed a number of distinct proofs on the subject. I shall content myself with quoting that which ought to have, and which I am sure will

have, the greatest weight among agriculturists. Within the last seven years, Mr. Coke has entirely given up the system formerly adopted on his farm, of applying fermented dung; and he informs me that his crops have been since, as good as they ever were, and that his manure goes nearly twice as far.'

"This doctrine, in a general sense, and compared with the old practice, agrees perfectly with my observation and experience; but Sir Humphry does not state, whether the dung is immediately ploughed in by Mr. Coke, or suffered to lie on the surface; and the difference between those two modes of application, will be found to be very important, by every person who will try them.

"I shall hereafter state my reasons *why it is improper, as a general practice, to manure lands that are intended for immediate seed crops;* but there may be cases where the state of the soil, from extreme poverty and other circumstances, require it; and in those cases, I am convinced that the best time and manner of supplying dung for such crops, is, by spreading it over the surface after the seeds are sown; at first sight, and according to Sir Humprhy's notions, this may appear to be a wasteful practice; but it is far otherwise: for, as Sir Humphry says, 'Organic substances, as soon as they are deprived of vitality, begin to pass through a series of changes, which ends in their complete destruction, in the entire separation and dissipation of the parts. Animal matters are the soonest destroyed by the operation of *air, heat* and LIGHT. Vegetable substances yield more slowly, *but finally obey the same laws.* The periods of the application of manures, from decomposing animal and vegetable substances, depend upon the knowledge of these principles.'

"Now, notwithstanding the manner of applying dung, which I recommend, that of spreading it over the surface, and there permitting it to remain, before it be ploughed in, twelve months or more, *is directly opposite to that recommended by Sir Humphry, it will be found more completely accordant with the above principles,* as well as with those of Mr. Kirwan: for, by leaving dung openly spread on the surface, it is evident that the influence of the air, the heat of the sun, and light, will be the least controlled or obstructed; and consequently, the decomposition will be more rapid, regular, ane conformable to the wants of the plants. Under such circumstances, more *carbonic acid* may be generated; but as this elastic fluid is heavier than the atmospheric air, it will fall on and penetrate the open surface of the soil, and thus accord in effect with the experiments cited by Mr. Kirwan, of Dr. Priestley, and M. Ruckett. And as to any loss arising by the evolution of any other gases, they are less likely to occur from dung in this situation than when buried; for *carburetted hydrogen gas* is formed in the greatest quantity during the putrifactive fermentation, and when the substances are immersed in, or glutted with water, *and excluded from the air and light; and in this state they most generally are when burried:* and

this gas possessing an opposite quality to the carbonic acid gas, in becoming much lighter than the atmospheric air, will as it is formed, operate in a reverse manner to the carbonic acid; it will immediately on being liberated, penetrate the surface of the soil, mount rapidly into the atmosphere, pass off with the wind, and be thus lost. And further, it is well known that animal and vegetable substances, decomposed by the cold putrefactive fermentation under the earth, or at the bottom of stagnant ponds, are inert and efficient; at least, until they are made to undergo some other chemical change, by calcination, oxydation &c.; this is evinced by peats, bogs, &c.

"We may likewise instance the effect of the accumulated animal substances, decomposed under the earth in burial grounds, which never exhibit any comparatively extraordinary luxuriance of vegetation. And, as a practical demonstration that dung, when laid on or near the surface, and repeatedly turned over and exposed to the action of the atmosphere, *is not very rapidly or very effectually exhausted*, I shall state a course of operations which were carried on in a field of about six acres, within my immediate observation.

"The soil of this field was a fine friable loam, and of a black color, but the surrounding land, although of the same texture, was of a foxy brown; this difference in the color, no doubt, was occasioned by the difference in cultivation and manuring. The surrounding lands had been treated in a careless slovenly manner, as a common farm; whilst the field in question was cultivated as a market garden, cropped with esculent vegetables, and manured at least once in the year for many years. At the period it came under my notice, the market gardner had died, and it fell into the hands of another person, who having but seven years to run of a lease, determined, as he said, to work it out; he therefore sowed it with white wheat for five years following, without giving any manure. The first year, it produced forty-eight bushels per acre, and every year after, the crops declined three or four bushels per acre. The sixth year, it was planted with potatoes, without manure, and the crop averaged fourteen tons per acre. The seventh year, it was sown again with wheat, without manure, and it produced upwards of thirty-two bushels per acre.

"And to show the beneficial effects of top-dressing, I shall also state that about this time, I took possession of a field of pasture land, of about twenty acres, a strong yellow or foxy clay; it lay on the side of a hill, and was very wet and poachy, particularly during the winter; had been generally cut for hay, although it seldom produced more than three fourths of a load per acre, and this not until the end of July. I drained it by cutting a ditch at the upper side, deep enough to get below the stratum of clay, which in some places was upwards of five feet, turning the water down the sides, and gave it a top-dressing of scavenger's manure, the cleaning of the town streets; and the year after, it produced me a load and a

half per acre, in the middle of June; and a second crop, of three-fourths of a load, the beginning of September; and this it continued to do, varying a little, more or less, according only as the seasons were wet or dry.

"And to show the effect of dung buried deep; the following instance may be sufficiently strong. I had noticed a field at Wickham in Kent, which was laid down for a cherry orchard, and planted with fine young healthy standard trees, that for two years made a beautiful and luxuriant growth, and the third year, in the spring, they threw out their shoots with equal luxuriance; but before summer, I observed to my astonishment, they were all withered and dead. Not being able to assign a cause for such an unusual failure, I called on the proprietor to inquire how it happened; he seemed perfectly resigned to what he called his ill luck, in having them struck with a blight; however, perceiving no reason why his trees should be blighted, whilst his neighbors all around, should escape uninjured, I inquired farther as to the nature of the subsoil, &c., when he told me he had been at great expense and trouble to prepare the soil, by giving it a thick covering of rich stable dung, and trenching it in, a spit and a half deep with the spade. I observed the trees had thrown out a profuse discharge of gum, and have no doubt, that during the first two years, the roots had not penetrated the dung, but on reaching it the third year, they were poisoned; or so glutted with such impure food, as to be thus diseased and destroyed.

"Whatever devastation may be committed by the insect or fungus tribe, to trees or plants, I am convinced that by far the greatest extent of injury, from what is placed to the account of canker, mildew, &c., if correctly investigated, will prove to originate in the unwholesome supply, or impurity of the food.*

"As to the objection, that by leaving dung on the surface, a too rapid decomposition of the manure, will be followed by a too rapid consumption of food; it may be said, 'a man cannot eat his cake and have it too.' Let the crop be suited to the manure, or the manure to the crop, *and as long as he gets its full value, he will have little reason to complain of its coming into his pocket too quick;* the sooner he gets a profitable return for one dressing of dung, the sooner he can afford another; and if a proper course of crops be taken, he may go on a long time without feeling cause to complain, that his lands are too prolific, or too rich.

"To be consistent, we must either stick to chemical principles, or give them up. The difference in the effect of the method I recommend, of applying manure on the surface, and there to suffer it to remain the longest period convenient; and that, by Sir H. Davy, of burying it immediately; may be determined by the com-

* We beg the attention of cotton planters to this remark!—*Ed. of So. Ag.*

parative formation and effect of the two gases, carbonic acid, and carburetted hydrogen. If the former be, as stated, a principal ingredient in the food of plants, and that by its gravity it will penetrate into the soil, no method more favorable for its generation and equal distribution can be devised, than by my mode of application; and if carburetted hydrogen be either an unwholesome food, or by its rapid escape, the occasion of a great waste of carbon; and nitrogen gas be poisonous or obnoxious, when in contact with the food; no mode can be more favorable to, or productive of both those effects, than burying the dung in an unfermented state." pp. 127–135.

"Fermentation is detrimental to plants, where it is produced by substances in contact with the roots, stems or branches, and often either by the heat occasioned, or effluvia emitted, causes disease and death." "Dung, when placed in contact with the roots, either fresh or in large proportion, sometimes produces a great increase of wood and foliage, but it gererally retards fructification or disinclines a plant to mature its fruit or seed. When in a state of nature, dung or manure seldom comes in contact with the roots; but being exposed on the surface of the earth, it there undergoes the needful process and change, and as it becomes soluble in water, and fit for food, it is conveyed between the particles composing the soil, or through the cavities oacasioned by worms, &c."

"Indeed, if the food of plants was wasted by exposure to the the atmosphere, ploughing and stirring the soil must occasion waste and sterility; and the same must be the case with turning over, and exposing masses of dung; but observing practioners well know that those practices are followed by additional prolificacy." "The fact is, I believe, that whether carbon and oxygen combined as carbonic acid, be the best state of preparation for the consumption of plants or not; carbon and oxygen form the grand essentials for making them prolific; and when vegetable and animal substances are laid on the surface of the soil, they are intended to enrich, they are in the situation best calculated for decomposition by oxydizement; for then as they are reduced to a soluble state, they are dissolved by water and carried to the roots; and when there is not moisture enough to carry down the soluble part, it lies dry on the surface; and whilst dry, as Sir Humphry Davy observes, no fermentation can take place; and thus circumstanced, under the alternate state of wet and dry, the decomposition is gradual, complete and rapid. This may be observed of a stake of wood that has been sometime fixed into the earth; for that part which is in the air, and that which is under the earth, will remain sound long after that part which is between both, or on a level with the surface of the earth, is completely decomposed."—*Haywood on Agriculture*, p. 141.

"Until very lately, the opinion was very general, if not univer-

sal, that fermented manures should be turned under with the plough as soon as put on the land, and that otherwise their value would be much impaired, if not totally lost by evaporation. This was thought especially necessary, if the manure used was rough or half rotted. I have thought much on this subject, and for the last 20 years marked the effects of manure in all its various modes of application, both on my own farm and on my neighbors'—and now propose to give you the results of my observation, leaving it to persons more learned than myself to reconcile these results to the principles of philosophy. Fifteen or twenty years ago, I observed an old man of good practical sense, and successful as a farmer, carting manure out in the month of July, on a field intended for Indian corn the next year; this was spread as fast as carted, and remained in that situation until the spring following. He justified this practice by a perfectly unanswerable reason, viz. that continued experience had taught him, that both his crop and his land were more improved by the use of his manure in that way, than any other he had tried. The confidence I had in the integrity and good sense of this old gentleman induced me to make repeated experiments on this subject, all of which have been decidedly favorable to top dressing or surface manuring, and proved to my entire satisfaction, that manure "when in contact with the earth does not lose by evaporation." This I was exceedingly loth to believe. and I made many efforts to account for the fact, (for that I could not doubt)—and at length came to the conclusion that the chemical affinity between the particles of manure and the earth was too strong to be overcome by the power of evaporation; and that the apparent evaporation is nothing more than the passing off of the water, which had been contained in the manure. Whether this is so or not, I am sure I do not know. But I *do* know, that in the many different experiments I have made, both the land and the crop are more benefited by the application of manure *on* the land than by *turning it under* the land. Not having fame as a farmer, to give weight to my opinions, I shall sign myself 'ARATOR.'"

"*Note.*—The late Mr. Thomas West, brother of Sir Benjamin West, settled on a farm in New-Jersey, after he had reached the age of forty. His object was to make it a grazing farm. He used no plough whatever, but the hoe and the scythe to eradicate briars, weeds, &c. He top-dressed his fields, or some of them, every year, and in a few years had the richest farm in the whole country around."—*Farmers' Register*, 1836.

Mr. James M. Garnett, who is, wherever known, held as high authority, says:—

"In your weekly Register, dated the 12th of this month, I find that one of your South-Carolina correspondents has requested me to inform him whether I have made any further experiments in addition to those which I mentioned in your second volume, rela-

tive to the surface application of manures; and what my present opinion is on that subject? It gratifies me to reply, that I have made some similar experiments since that time, and have witnessed several made by others; all of which, without a single exception, contribute to confirm the opinion there expressed—that surface manuring is best. It is true that nearly all these experiments were made on cow-penned-land, and in the following manner—the pens were made as early in the spring as it is customary to pen cattle; during the whole season, they were kept of the same size, and the same number of cattle penned in them; they were removed at regular intervals of time, when they were alternately ploughed up and left unploughed. On the following spring they were planted in corn—to be followed by wheat in the fall; and in all these cases, both the corn and the wheat, on the unploughed pens were so much better than what grew where the pens had been ploughed up, that the lines of each pen might be traced as plainly as if the fences had been still standing. These are indisputable facts, and are now so generally known in my part of the country, that it is now a very rare thing to see cow-pens ploughed up as soon as the cow-pens are removed."—*Farmers' Register, Dec.*, 1841.

General Thomas Emory, in his address before the Agricultural Society of Queen Ann's county, Maryland, says:—"This is the third experiment I have made of turning under for manure, a crop of oats, that would have given me forty-five bushels per acre, if harvested, on recently limed land, just at the time they were beginning to change color; and now being satisfied that it will not do, I shall repeat it no further. No green crop that I have ever turned under for manure, except clover, has realized my expectations. Even clover lay, I prefer with the top mown or grazed off. The future effect upon the land, I desire yet to witness in the after cultivation, but the oats turned under this season having been completely decomposed by the quantity of rain, I do not expect to have my opinion changed, and expect confidently to remain where I now am, and have been for a long time, a firm believer in the propriety of surface manuring, rather than turning it under. I have never been disappointed in weeds, or other manure, spread upon the surface, and allowed to decompose there, and thus become absorbed by the soil. When turned under the soil, it bleaches, seems to become neutralized, and its effects are lost, and go, I know not where. It may be that the direct action of the atmospheric air is essential to give vigor and fertilizing effect and action to the substances to be manures. I know that when turned deep in a thin soil, dark substances lose their color; and on my land, they do not act as manures when thus placed.

"I have recently seen an account of the successful experiment of a North-Carolina farmer, who rolling down an oat crop, allowed

it to waste on the surface, which I much desire to see repeated here. This experiment much better accords with the theory of surface manuring, which seems rapidly to be gaining ground every where."

Mr. Ruffin, in his Register for November, 1841, says:—"If S. had been a reader of the earlier volumes of the Farmers' Register, he would have seen many confirmations of his opinion, of the propriety of applying putrescent manures to the surface. We have, for seven or eight years, considered the advantage as settled by sufficient experience; and the rationale or theory as perfectly satisfactory. And, if it be as improving to soil or crop, or even *nearly so*, to apply manure to the surface, as to plough it under, it offers a gain of 50 to 100 per cent., in the value of the general manuring operations of a farm, and the greatly increased convenience. Under the formerly supposed necessity for ploughing under manures, to prevent their waste, they could be applied but at certain times, and under certain conditions of manure and of crop. But, if it be permitted to apply to the surface, the application is not only almost always more easy and convenient, but the manure may be laid on when too coarse to be easily ploughed under, or when the state of the land, or the crop, would not permit ploughing. For, cultivated crops, and short or partially rotted manures, we should care very little whether it were ploughed under just before planting, or given as a top dressing, very soon after; and, considerations of mere convenience would induce the choice of either mode."

THE AGRICULTURAL SURVEY.

It will be well to remind our Planters that Mr. Ruffin, our Agricultural Surveyor, is actively engaged in the duties of his appointment. During the last week, he explored the shores of Cooper River, to its source; and examined various deposites of marl, that have, for ages past, been suffered to remain in their ancient beds, without a knowledge of their value, or their mode of application. He states that the marl, although not yet analized, appears of the best quality; and is in sufficient abundance to manure the whole State. The writer of this had the pleasure on yesterday, of accompanying Mr. Ruffin and Dr. Johnson on his first visit to the shores of Ashley River. At the plantation of Mr. John Brisbane, an inexhaustible bed of marl has long been known to exist. It appears however, to contain considerable quantities of silicious matter; but has not been subjected to chemical tests. Another large bed exists on the plantation of Mr. Clement, in the vicinity of Mr. John Ramsay. Indeed, the writer has seen it, not only on

several places along Ashley River, but on nearly all the rivers of the State, and far in the interior—at the Eutaws, and in several localities in Orangeburgh District.

It is confidently believed that marl, which is of easy access to nearly all our plantations, will, in the course of time, be the means of resuscitating the almost exhausted soils of Carolina. The appointment of so enlightened and eminently practical and successful an Agriculturist as Mr. Ruffin, is one of the most judicious selections that could have been made. In order that planters in our maratime Districts, may avail themselves of the knowledge and experience of our Agricultural Surveyor, it is suggested that each planter consent to try an experiment of marling one acre, at the moderate rate of 100 bushels of marl per acre, and report the result next autumn. Should this communication meet the eye of Mr. Ruffin, he is respectfully requested to give such directions, through the public prints, as would enable the planter to make a fair experiment. J. B.

[*Charleston Mercury.*

To the Editor of the Mercury :—

In your paper of the 10th, a call is made upon me by your correspondent, J. B., to which it is my duty to respond. J. B. urges every planter having access to marl, to apply it to at least one acre of land, for the crop of the present year; and he requests of me to give directions as to the manner of the application.

Of the lands which have as yet come under my personal observation, there is but a small proportion to which the application of marl would not be both beneficial and profitable. The only exceptions to be stated are, such soils as are naturally and sufficiently calcareous, and other lands not sufficiently drained, and suffering from wetness. So, no one need wait because not knowing where to marl. But if there be choice of lands for experiment, the best and earliest effects of marl may be expected on soils containing the most vegetable or other putrescent matter—or which are the most *acid*, the latter quality being indicated by the greater propensity of the land to nourish the growth of pines and sorrel. Land which has been some years lying out of cultivation, or has been permitted to rest at frequent intervals, and kept from being grazed, when under a regular course of culture, will be much more benefited by marl, than would the like soils if recently cropped every year, or otherwise kept under very exhausting tillage. But even if any such unfavorable condition of the land should prevent the full and proper effects from marl on the first crop, it will show them afterwards—and the more strongly according to the greater quantity of nutritious matter that the land may be enabled to receive, whether from its own growth, or from other sources. Whatever early effects may be produced by marl, will never be lost, under judicious

and mild culture, (which is always the most profitable culture,) and the early product will continue to increase for twenty years or more.

There is as little choice in regard to the kind of crop to be marled as of the kind of land. All known cultivated crops are thus greatly benefited. Perhaps a benefit additional to that of *increased bulk* of product, may be found by marling for the long staple cotton, in hastening its maturing, and thereby making much of the product white, which usually is stained, because not ripe before cold weather. Of rice, too, I should infer that calcareous manures will increase the product, and still more certainly improve the quality of the grain.

As to the manner of application, I would advise (generally, and without knowing the circumstances of any particular case,) that the quantity applied should be about 100 bushels to the acre. Of course, it ought to vary according to the degree of richness of the soil, and the nature and condition of the land. But 100 bushels, even if the marl is very rich, as most of it is, will be no where injurious by its too great quantity, and will also be a sufficient dressing for ordinary poor lands. Should the marl be much poorer, and therefore the dressing be too light, still it will be serviceable in proportion to its strength, and may be added to afterwards, when such deficiency has been correctly ascertained. The marl should be scattered as evenly as may be convenient, over the whole surface, so as to be thoroughly intermixed with the soil, and equally diffused by the subsequent tillage processes. It should never be accumulated in the alleys, or under the lists, or in any way kept in mass, (no matter how small the masses,) beneath the stalks of growing plants.

For continued and regular marling to be made most profitable, of course, far more full directions would be needed. But these alone will suffice to make applications always more or less profitable. I most earnestly second the proposal of J. B., with one amendment thereto, viz: that instead of *one acre*, every planter who has it in his power, will marl ten acres or more, for the coming crops. The *first beginning* of every new operation is attended with much trouble, and so will be the first attempts at marling. But the greater part of the trouble is in *getting ready;* and when that has been done, and one acre has been marled, ten more may be covered, with perhaps less trouble than was required for the first acre alone. No man will fail to profit by a judicious application; and, there is but little doubt, that for all the labor and expense thus directed, there will be returned, in increased products, on the general average, a permanent net profit of at least 50 per cent. per annum on the outlay. Every acre marled this year, will, by its effects shown, probably induce the marling of twenty the next, and a hundred the year after.

EDMUND RUFFIN.

MONTHLY CALENDAR

OF

HORTICULTURE AND FLORICULTURE,

FOR MARCH, 1843.

VEGETABLE GARDEN.

Sow the Marrowfat, and such other kind of Peas as are calculated for a late crop; they do not require as much protection as those sown at an earlier period; let them be sown in trenches 5 feet apart, and let the seeds be covered about 3 inches deep. If your Peas, sown last month, have not been destroyed by frost, and have come up, hoe them when they are about 3 or 4 inches high; it will strengthen and promote their growth. If you have planted Marrowfat, and the larger kind of Peas, you should give them sticks of about 6 feet high, and do not postpone this necessary part of your work later than when the plants have arrived at about 6 inches in height. Sow Early York, Sugar Loaf, and the large kind of Cabbage seed. Sow Turnips, Carrots, Parsnips, Radishes, Lettuce, Small Sallading, Parsley, Tomatoes, and Beet and Spinach Seeds. Let these be sown as early as possible. Towards the end of the month, plant Watermelons, Muskmelons, Cucumbers, and Okra and Celery Seeds. It is not yet too late to sow Onion and Leek Seeds, and to plant Irish Potatoes. Let your Early York and Carrot seeds, at this season of the year, be of English growth. The best sort of Parsley is the curled. Sow your Carrots and Parsnips on good ground, dug a spade deep on beds 4 a 5 feet wide, containing 4 trenches, in which the seed is to be thinly sowed and lightly covered. Your Turnip bed, which may be from 5 to 10 feet wide, must be carefully turned up, the seeds may be sown in drills or broadcast, and the plants be suffered to grow from 7 to 10 inches apart from each other. We have been most successful in raising Irish Potatoes in our Gardens around the city, by planting them in rows two and a half feet apart, covering them over with coarse sedge marsh grass, the tops of decayed vegetables or straw, to the thickness of 5 or 6 inches; covering this layer with earth. Let your Watermelon, Muskmelon, and Cucumber hills be made of light rich earth, 10 inches high, and 18 inches broad on the top, on which you may plant 7 or 8 seeds.

FRUIT GARDEN.

It is not yet too late to transplant all kind of fruit trees. Let your trees be now carefully pruned. Dress your Strawberry and Raspberry beds, and set out cuttings of Fig trees.

FLOWER DEPARTMENT.

Set out cuttings of Roses, Geraniums, and Green-house plants. Set out Tube Roses. Sow the seeds of Amaranthus, Balsams, Marygolds, Carcopsis, and of all kinds of annuals. This is a good season to procure Trees, Shrubs, and many beautiful species of flowering plants from the fields and woods. We will enumerate a few. The Laurels, (Magnolia, Grandiflora and Glauca, Gordonia Lasyanthus, and the Liliodendron Tulipifera. Fringe Tree, (*Chionanthus Virginicus.*) The Gerardia, (*Gerardia quercifolia.*) The Strawberry Tree, *Euonymus Americanus.*) The Aronia arbutifolia; the Snow Drop Tree, (*Halesia tetraptera.*) The Bush Honeysuckle, (*Azalea nudiflora* and *Azalea viscosa.*) The Scarlet Honeysuckle, (*Caprifolium sempervirins.* The Phlox, &c. &c.

INTRODUCTION OF A NEW GRAPE INTO SOUTH-CAROLINA.

We have been favored by a friend with a parcel of the seed of a celebrated variety of French Grape, called "Chasselas de Fontainbleau." In enclosing us the seed he says:—"My opinion is, that the seeds should be sown in the spring, at the season when the native vines begin to put forth their buds. I am lead to believe that the proper soil will be that on which grows the magnificent vine, which gave its name to the Club that used to meet under its shade. The spot selected, should be kept clear of weeds, and be fenced in. Let the seeds be sown at the distance of one foot from each other. I believe that in the second year of their growth, they will be fit to transplant."

The noble Grape vine above alluded to, grows in wonderful luxuriance on the farm of Robert Macbeth, Esq., situate on Ashley River, back of the Race course, about two miles from town. It measures about FIFTY-FIVE INCHES in circumference, for a considerable portion of its stem or trunk; and its branching honors spread over the tops of several noble live oaks, forming in summer, a most umbrageous and refreshing canopy. It has never been pruned, but has been allowed to grow in wild luxuriance, and bears a small and inferior, but not unpalatable black grape.—CHARLESTON COURIER.

POUDRETTE.

The subscriber having accepted the agency of the POUDRETTE COMPANY of New-York, (conducted by D. K. Minor,) will receive orders for the same. The following are the present prices, viz. $1 50 per barrel, for ten or more barrels, or $5 for three barrels for less less than ten—or $2 for single barrels. To these prices will have to be added the freight, wharfage and drayage here.

Conditions, cash on delivery. JOHN D. LEGARE.

Feb. 1, 1843.

Ploughs, Cultivators, Corn & Cob Crushers.

THE Subscriber keeps constanly on hand, Ruggles, Nourse & Mason's best PLOUGHS, which have taken numerous premiums at the North, and which he has sold for the three last years, giving general satisfaction to our Planters; they vary in price from $6 to $10, the first being a light one horse Plough, the last a four horse Plough. Also, Freborn Ploughs, from $3 25, upwards, according to the size. The Cultivators are of the best construction, and now generally used in cultivating Corn at the North.

CORN & COB CRUSHERS, made by Hussey, Murray & Sinclair, with every kind of Implement necessary for the Field or Garden culture, consisting in part, of STRAW-CUTTERS, CORN SHELLERS, HOES, SPADES, SHOVELS, AXES, HATCHETS, DUPO FORKS and DRAGS, SCYTHES, CRADLES, &c., &c.

AND

An extensive assortment of *GARDEN and FIELD SEEDS*, which are warranted to be of the best varieties. Most of these are imported direct from Europe, by the Subscriber.

J. D. LEGARE,

October 29. *No. 81, East-Bay, Charleston.*

French Fruit Trees—Camellias, &c.

THE Subscriber has on hand an excellent assortment of FRUIT TREES, imported by him direct from Paris last Spring, and which he had planted out here They consist of PEAR, APPLE, CHERRY, APRICOT, PLUM, Madeira WALNUT and JUJUBE TREES. Many of the Pears and Apples blossomed last Spring and some bore fruit. It is therefore presumed that a large number will do so the coming season. He also expects in the month of December a further supply of Fruit Trees, Roses &c. from Paris.

He offers also, for sale, Peach, Nectarine & Apricot Trees of American growth; and will also receive orders which will be executed at 10 per cent. on cost and charges, for any description of Fruit Trees, Ornamental Shrubs, or Plants, from the Nurseries of *Sinclair & Coxe, of Baltimore, Robert Buist, of Philadelphia*, or any of those in the neighbourhood of *Boston*.

The prices of the French Fruit Trees vary from $1 to 2, according to the size of the Trees. The American Trees are at from 37 to 75 cents.

Also, remaining from last year's Stock,

A few very fine varieties of CAMILLAS, AZALIAS and other Ornamental Green-house Plants, and a choice collection of ROSES, consisting of Tea, Bengal, Bourbon, Perpetual Damask, &c. He expects also, to receive a further supply of the above at the proper season.

J. D. LEGARE,

October 29 **No. 81, East-Bay, Charleston.**

THE SOUTHERN AGRICULTURIST.

☞ In consequence of letters and communications being frequently received by the subscriber, addressed to him as "Editor of the Southern Agriculturist," he deems it proper to state, that he is in no way or manner whatever, connected with that Journal, either as Editor, Conductor, Proprietor or Publisher. That it is now under the sole control and direction of its Proprietor, Mr. A. E. Miller, to whom all communications and letters should be addressed.

Feb. 24th, 1843. J. D. LEGARE.

TO OUR CORRESPONDENTS.

We hail with pleasure the receipt of several valuable Communications from different parts of the State; it is augury that our efforts to continue the *Southern Agriculturist*, are not in vain. We have called for aid, and it has come to us in and abundant supply. We have now to regret that our Numbers are not large enough to contain even as much as we would willingly publish. There is then no lack of knowledge, and we hope it will continue to flow; and that our subscribers will cheerfully repay us for our labor, and our information.

TO OUR SUBSCRIBERS.

We annex a list of payments as an inducement to all, to have their names thus honorably recorded. For it is but just—as the laborer is worthy of his hire; in such view we take it. The number who have withdrawn from the hardness of the times, &c. we hope will be made up by new comers—like the world, which continually changes its inhabitants—when one gets tired, others come and take their place. Terms are moderate—only *Three Dollars* per annum.

Paid in advance for 1843.

Gov. J. H. Hammond,
Mr. Andrew Milne.
Dr. Edward W. North.
Mr. Thomas M. Williams.
Major William M. Murray.
Col. J. J. Moore.
Mr. Joseph A. Pope.
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Mr. A. H. Shepherd.
Mr. A. Hill.
Dr. R. L. North.
Mr. J. T. H. White.
Mr. Barnard S. Elliott.
Mr. Carnot Bellinger.

For 1840, '41, & '42.

Mr. Thomas M. Williams.

For 1842.

Gov. J. H. Hammond.
Dr. Charles Desell.
Dr. H. R. Frost.
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MILLER & BROWNE,

RESPECTFULLY inform their friends, and the public generally, that they execute all kinds of Plain, Ornamental, and Fancy Printing in the neatest style, at short notice. They solicit the patronage of their friends.

They have just received a splendid assortment of COMBINATION BORDERS, for Cards, Fancy Store Bills, &c. which will be worked in the most variegated and beautiful style.

January, 1843.